UCRL-JC-125184 Abs

An Atmospheric General Circulation Model's Climate Sensitivity to Initial Conditions

M F Wehner, C Covey (Atmospheric Science Division, Lawrence Livermore National Laboratory, Livermore, CA 94550; 510-422-1828; e-mail: covey@pcmdi.llnl.gov)
Sponsor: Philip B. Duffy

Short-term weather forecasts are well known to be sensitive to initial conditions. Recently, some aspects of the long-term climate simulated by atmospheric general circulation models have also been found to be sensitive to the atmosphere's initial conditions, even when sea surface boundary conditions are prescribed by observations.

The UCLA/LLNL parallel atmospheric GCM is a useful tool for investigating this phenomenon. On several massively parallel computer architectures, we have obtained execution efficiencies comparable to or exceeding those attainable on conventional multiprocessor supercomputers. As a result, we have been able to produce an ensemble of 20 ten-year simulations. Members of the ensemble have surface boundary conditions identically prescribed as in the Atmospheric Model Intercomparison Project, but initial conditions differ slightly. The large number of members in our ensemble provides better statistics than heretofore attainable when assessing the relative effects of differing initial conditions versus differing year-to-year surface boundary conditions.

In this study we focus our attention on ocean-atmosphere fluxes of importance to the coupled system's behavior, such as the difference between precipitation and evaporation.

This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under Contract No. W-7405-Eng-48.

1. 1996 Fall Meeting

2. KH 200111

3. Curt Covey
LLNL
PO BOX 808 L264
Livermore, CA 94551
Tel: 510-422-1828
Fax: 510-422-7675

4. A

5a) None
5b) 1610 Atmosphere
1620 Climate Dynamics
3300 Meteorology & Atmospheric Dynamics
5c) Global Change

6. Oral

7.

8. 25% at International AMIP Conference Monterey, CA

9. Attached PO#

10. C.

11.None

12. No

13. No